**Identifying the size and cache levels of a computer**

To identify RAM size and GPU cache properties of my computer I used the CPU-Z program.

**RAM**

It has 32Gb RAM.

**CPU**

To understand why the CPU has its exact amount of cache memory, we have to know how many cores it has.

P-cores are needed to execute a few difficult tasks that need a lot of power and fast response (like gaming or 3D rendering), while E-core are used for tasks that require much less power (like background system processes or streaming music). Since they are made for different tasks, memory is organized differently for E- and P-cores, so they can make their tasks more efficient.

So, the program showed that my computer has 6 performance cores and 8 efficiency cores. It has three levels of cache.

**Cache levels**

My CPU has 3 cache levels, L1, L2 and L3. They are needed to store data that is likely to be used soon, cache of each level is much faster than Ram memory to access the data.

**L1**

L1 cache stores the most frequently accessed data and instructions, it’s the fastest and the smallest level because it’s located near cores. It’s divided on data and instruction cache: data cache is used for storing the data that is currently being executed and instruction cache stores instructions about what the core is going to execute. Each core has its own L1 cache.

Each my P-core has 48 Kb of data cache and 32 Kb of instruction cache and each my E-core has 32Kb of data cache and 64Kb of instruction cache, which gives 1248 Kb of L1 cache.

**L2**

L2 cache stores less frequently accessed data and is located a little further from cores, after L1. Each core may have its own L2 cache, but L2 cache also can be shared between a few cores so they can share some data.

Each my P-Core has its own L2 cache in size of 1.25Mb and my E-Cores are grouped in groups of 4 to share L2 cache, so I have 2 L2 caches and their sizes are 2Mb. This gives total of 11.5Mb of L2 cache

**L3**

L3 cache is used to store data that is less likely to be used, located between and around cores and is shared between all cores.

My CPU has 24Mb of L3 cache.

**Identify which devices use SRAMs and DRAMs**

Static Random Access Memory or SRAM is much faster and much more expensive than DRAM, also it doesn’t need refreshing because the data is stored in flip-flops, so it’s used by devices that execute high-speed tasks.

CPU uses SRAM as cache memory because of its fast access times, which is critical for CPU performance. Many microcontrollers use SRAM because access low time is required for enjoying many games. Many embedded devices, such as automotive electronics and industrial systems, use SRAM for fast, reliable memory (usually, embedded devices don’t need a lot of memory and faster memory can save a lot of money or even someone’s life). Also some high-speed caches of GPU are using SRAM, because they have to draw a lot of details very fast.

Dynamic RAM is much cheaper and slower than SRAM, so it's used by devices that require a lot of memory, or don’t require speed. It needs to be refreshing constantly because it stores data in capacitors.

Computers use DRAM to store data and run applications and operating systems. Some networking applications like maps use DRAM to store data. SSDs use DRAM to speed up access to frequently used data.